



Green Street Charrette and Concept Design Report for Huntington, West Virginia

Resilient Design Assistance

December 26, 2019

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INTRODUCTION

The United States Environmental Protection Agency's (EPA's) Region 3 Water Protection Division provided resilient design assistance via contractor support to the Huntington Stormwater Utility for a four-block section of Madison Avenue in the Central City neighborhood of Huntington, West Virginia. The project included a green street design community charrette to identify green infrastructure solutions for water quality protection and flood mitigation. A charrette is a meeting in which all stakeholders in a project attempt to resolve conflicts and map solutions. The two-day charrette, which included a technical primer on green infrastructure, a walking tour of Madison Avenue, and several design working sessions built upon a previous technical assistance project which developed a Master Plan for green street initiatives in the Central City neighborhood.

The technical assistance is designed to help educate the Stormwater Utility, local elected officials, and stakeholders about the benefits of green infrastructure and move a community through a process of assessment and planning with the ultimate objective of creating a concept design plan for green infrastructure opportunities within the Madison Avenue corridor that can be used to seek funding for implementation. The charrette helps a community identify potential challenges, as well as realize opportunities that already exist to make progress. It includes a series of pre-and post-workshop conference calls and an on-site convening of stakeholders to discuss issues, next steps, and actions related to advancing the community's specific goals.

STAGES OF TECHNICAL ASSISTANCE

This report documents the key outcomes of the technical assistance green street charrette for Huntington Stormwater Utility in West Virginia. Huntington Stormwater Utility exists as a separate entity from the City of Huntington, but city officials served as important stakeholders in the process. This report identifies key community issues, prioritized goals, and specific actions to achieve the following goals:

- Engage with Huntington Stormwater Utility and other stakeholders to identify concerns and priorities related to stormwater;
- Identify opportunities for implementing green infrastructure concepts in a context sensitive manner;
- Develop green infrastructure concepts and 20% design for the highest priority opportunity areas. Note: the concepts are provided in the appendix of this report and will serve as the basis of the 20% design plans which will be provided as a follow-up deliverable to this report.

COMMUNITY CONTEXT

Huntington is the county seat of Cabell County and the second largest city in the state¹, having been founded in 1871². Huntington sits on the banks of the Ohio River and extends into neighboring Wayne County. It is the home of Marshall University and just over 46,000 residents³.

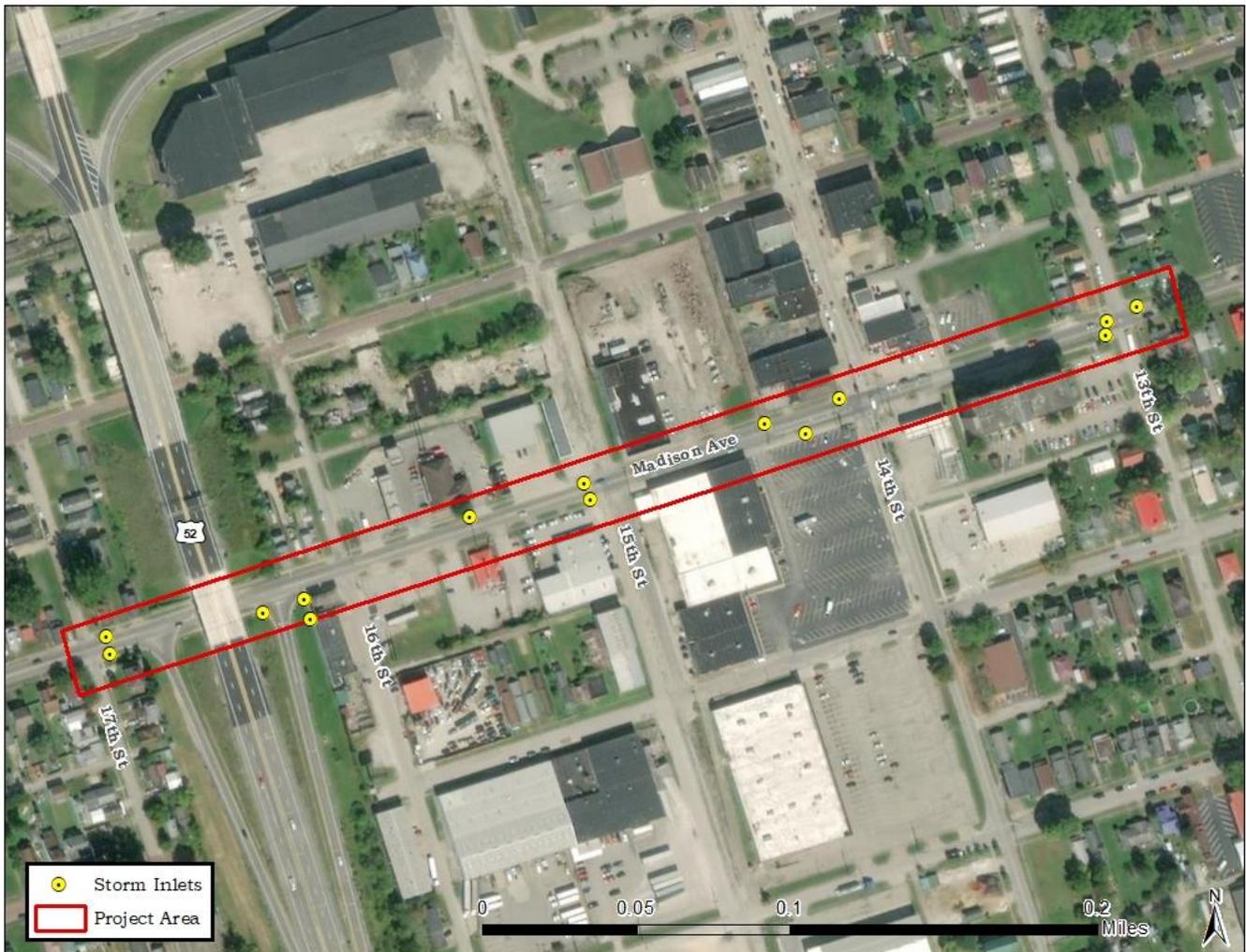
¹ <http://www.cityofhuntington.com/visitors/community-profile>

² <http://www.cityofhuntington.com/city-government/history-of-city-hall>

³ <https://www.census.gov/quickfacts/fact/table/WV,huntingtoncitywestvirginia/PST045218>

Interstate 64, Route 60 and Route 52 run through Huntington and serve as major thoroughfares into Ohio. Route 52 exits impact the Madison Avenue corridor. The median household income is just over \$30,000, with about a third of the population below the poverty level³. In comparison, the median household income in West Virginia is over \$44,000.

Huntington has experienced continual local flooding issues at the 14th Street and Madison Avenue intersection due to insufficient drainage infrastructure. This has resulted in shallow ponding of stormwater along the curb during and after rainfall events which presents a traffic safety issue. Heavy truck traffic has potentially crushed the existing storm water pipes.



General project area⁴.

⁴ <https://www.google.com/maps/@38.4090662,-82.4803295,504m/data=!3m1!1e3>

Since Huntington is an older city, a significant portion of the stormwater infrastructure was developed 50 – 100 years ago and few records exist to document the exact layout and location of the pipe network. Approximately 90% of Huntington's stormwater flows into a combined sewer system managed by the Huntington Sanitary Board. The Sanitary Board does maintain a GIS database for the sanitary and combined sewers however the database does not generally include information on system invert elevations and horizontal locations are approximate. The separate stormwater sewer generally not well identified. Occasionally, information about the pipes and network is not known until a repair is required. The city also has a substantial amount of impervious area and very few catch basins along many of its streets. This contributes to street flooding.



Water ponding at 14th Street and Madison Avenue intersection during a mild storm event.

The Sanitary Board has identified pipe networks (sanitary, combined, and separate stormwater) where it can and has provided a basic PDF network map based off their existing digitally mapped data. This network map was used to develop concept plans and other products described in this report.



In 2018 a Green Street Initiative Design Charrette supported by USEPA Region 3 was conducted in Huntington. The charrette focused on the Central City neighborhood and brought a diverse group of stakeholders together to develop a Master Plan to guide further consideration and implementation of green street concepts within Central City. The Master Plan identified three corridors within Central City for further green street development including Madison Avenue. Further outcomes of the charrette were community-based design recommendations on streetscaping, areas for flood mitigation, signage for wayfinding, and placemaking.

This project seeks to build upon previous efforts in Huntington to identify through community engagement green street elements which can be integrated into the

The Central Avenue Green Street Initiative Master Plan provides a framework upon which to base a green street design for Madison Ave.

Madison Avenue corridor to help alleviate localized street flooding as well as create a sense of place, while improving water quality.

STAKEHOLDER WORKSHOP

Huntington Stormwater Utility representatives, Huntington government representatives, EPA representatives, community stakeholders, and consultants gathered at the Westmoreland Women's Club at 2962 Bradley Road in Huntington for a two-day workshop on May 14 and 15, 2019. The workshop included a background presentation on stormwater management and an introduction to green infrastructure practices, a tour focused on identifying potential sites for the design and installation of such practices, and a working session where participants provided input into potential green infrastructure practices and then identified the highest priority sites.

The first session was opened by Jonathan Smith, with Tetra Tech, and Suzy Cho from the Low Impact Development Center in Washington, D.C., who gave an overview of complete streets and their goals, purposes, and benefits across the country. Attendees were also briefed on the Central City Green Street Initiative Master Plan to provide context for later decisions regarding green street design elements and their consideration for inclusion in the concept plan. The presentation included an explanation of the various elements, issues, and design techniques for different green infrastructure applications in various situations and outlined operations, maintenance, and funding issues along with implementation options.

Overall, the presentation was well received, and attendees were excited about how green infrastructure concepts might serve to increase green space and general community aesthetics,

encourage economic growth and revitalization, and help alleviate flooding issues. In the afternoon of the 14th Stakeholders were led on a site tour of the Madison Avenue corridor and select adjacent areas. While on the tour, participants were able to observe an existing bioretention cell that was installed at a Bakery truck loading facility lot a few years ago. The bioretention cell is an example of successful green infrastructure practices that can reduce localized street flooding. Following the tour, participants reconvened in the Women's Club for a brief review of site conditions, available data, and design concepts.

Site Tour

The workshop participants met at the parking lot of Wild Ramp , a local year-round, non-profit farmers market , located within walking distance to the site. , Participants viewed an existing green infrastructure stormwater catchment (bioretention cell) and discussed potential options for stormwater management along the project area. participants indicated there was conflicting information concerning ownership of Madison Avenue. The group observed the intersection at Madison Ave and 14th Street west, where several inches of water can pool during heavy rains.. Participants noted an interest in consulting with West Tenampa restaurant owners at the site and gaining their support for potential green street improvements involving renovations to the parking lot. Trees were recently planted along the project area, but community members dug several up due to concerns about property damage, business visibility, leaf and limb litter, and intersection turning visibility. This observation highlighted the need for informed green infrastructure education with property owners and appropriate plant type selection. Fruit trees were suggested. Participants discussed the maintenance requirement and likelihood that fruit would obstruct drainage infrastructure. It was noted that the Sanitary Board conducts street sweeping but better coordination was discussed.

At an additional focus site, participants advocated for working with property owners to create a pocket park in the large parking lot serving a former department store. Participants discussed the potential for a pop up shops, food



Madison Avenue and 14th Street intersection. Note the lack of parking lot guidance, large impervious area, and cracked, depressed pavement at the left corner of the parking lot.



Potential project improvement site at abandoned department store. Notice the expansive impervious area, wide traffic lanes, and recently planted trees.

trucks and placemaking signage. The local Marshall University art programs students will be painting windowpanes on the old fire station⁵. Local community groups may find artists willing to paint murals on boarded windows.

From there, the group moved down to another focus area on 15th Street West where a railway crosses Madison Avenue. Options discussed for green infrastructure at this site included a pocket park, rain garden, or rail-to-trail connecting additional recreational sites through the City. Significant tractor trailer access at this site was noted serving businesses along the alleys and parallel roads.



Railway north of Madison Avenue. Notice the wide impervious and gravel space on either side of the track.



Railway south of Madison Avenue. Notice

The group also visited the site of a former gas station, currently used for large truck parking. Participants discussed the likelihood that the old gas tanks were still buried and potentially leaking. While the location was acknowledged as a site eligible for green infrastructure placement, the liability and cost in gas tank removal and potential soil disposal remediation presents a challenge.



Stakeholders viewing the former gas station lot across Madison Avenue.

Finally, participants toured the portion of Madison Avenue where vehicles enter and exit State Route 52. This site offers an opportunity for many green infrastructure options and place making signs. The highway bridge drainage currently discharges stormwater into the street where gravity diverts it to nearby catch basins. Coordination with state officials was discussed to prevent the flow of water directly into driving lanes. Stamped crosswalks were discussed but it was noted that previous attempts to install them were met with opposition.

Throughout the site visit corridor, the group discussed opportunities for green streets, which include bioretention, rain gardens, or bioswales with strategically chosen vegetation and sidewalks or bike

⁵ The project, consisting of a painted mural on the old firehouse building was completed shortly after the workshop but before the publication of this report.

lanes incorporated to improve pedestrian access and aesthetic appeal. The 14th Street West, 15th Street West, and Route 52 intersections were considered as primary opportunity areas.



Existing conditions at the State Route 52 exit onto Madison Avenue. Note the bridge drainage in the left photo and the existing generic directional signage to the far right.

Site Prioritization for Concept Designs

On May 15, workshop participants reconvened and divided into two teams to prioritize sites for further green infrastructure design work and discuss feasible green infrastructure options. Then there was a recap of the outcomes of the previous community meeting followed by an overview of green infrastructure elements, benefits, and basic design techniques. The facilitators led the group through an exercise to identify prioritization factors the group wanted to consider when selecting sites.

Prioritization factors identified are:

- Redevelopment
- Reduce stormwater volume/street flooding
- Reduce urban heat island effect
- Pedestrian safety

The group consisted of key stakeholders that could serve a direct role in the incorporation of green street concepts into existing policies and future complete street projects. Attendees consisted mostly of Huntington Stormwater Utility leaders, city administrators, and other members of various governmental departments, but also included representatives from the Marshall University Engineering Department, Metropolitan Planning Organization (MPO), AmeriCorps vistas, and an active microenterprise development nonprofit known as Unlimited Future, Inc.

Following a brief summary and review of the previously completed community self-assessment, participants focused on the Madison Avenue corridor as a starting point to discuss how green and complete streets could be implemented in Huntington. Madison Avenue is an active thoroughfare between several local parks, trails, and city centers. There was some concern among workshop participants that the project presented unrealistic maintenance objectives, concepts adverse to current city leadership, and location in an area outside of current municipal investment targets. Others in the group were quick to point out that there are existing local and state funding opportunities, and that the location was important for pedestrian and bicycle safety as well as quality of life in the area. Ultimately, there was consensus among the stakeholders that green and complete street elements and practices must be placed in the appropriate context with ongoing coordination. To determine the appropriate context, city agencies could target areas where the need and benefits of green and complete street concepts are greatest and the desire for such place-making strategies has strong property owner support. Furthermore, it would be helpful to consider areas where existing conditions are conducive to green and complete street implementation while ensuring that the design still works well from a long-term maintenance function and community development perspective.

Next, workshop participants broke into two teams, White and Green to represent local Marshall University colors. The teams engaged in a planning-level design exercise using area maps and game pieces to identify potential green and complete street opportunities and benefits at major intersections along the Madison Avenue corridor. Both teams focused on the entire project area and differing concepts were later used to gauge overall group preference.

Team White suggested concentrating green infrastructure in the side streets. They identified the vacant department store parking lot at the corner of 14th Street as a potential plaza area with stormwater collection features. One of the main priorities included improved street lighting and placemaking gateway signage in front of 14th Street West.

Team Green advocated for a center median near the Route 52 exit ramp to help slow traffic and provide a more pleasing pedestrian experience. The team noted that street width may not allow both a median and a bike lane. Questions and issues arose concerning swale maintenance and installation difficulty, road ownership, large truck accessibility, as well as coordination with the WV Division of Highways. The preference eventually became vegetated medians as opposed to bioswales. Better highway signage was suggested to direct lost truck drivers, so they do not



Workshop participants using game pieces to site different green infrastructure practices at the priority sites.

inadvertently take the local exit. Bike lane placement and sharrows⁶ proved difficult to plan due to safety concerns. Traffic studies were advocated to determine the number and type of vehicles exiting the highway and utilizing 15th Street West.

At the conclusion of the break out session, each of the two breakout groups, named white and green to reflect the colors of nearby Marshall University, briefly summarized their findings and recommendations for each subject area. The workshop then concluded with an action planning exercise to identify a final consensus. Through this process, participants revisited the original list of goals in advancing green and complete streets identified by the local team prior to the workshop, as well as the strengths, weaknesses, and opportunities discussed during the community meeting and other workshop components. These elements provided a framework for the workshop attendees to identify potential action items that could help achieve each goal.

KEY COMMUNITY ISSUES

Many of the issues raised at the community meeting were similar to those raised at the technical workshop on the second day. Existing initiatives and a strong history of community collaboration are key resources to be drawn upon, while identifying resources for construction and long-term maintenance and effectively engaging all relevant stakeholders to determine appropriate green and complete street applications could prove difficult. Workshop and community meeting participants shared several strengths, challenges, and opportunities unique to Huntington that could serve to direct the next steps for moving forward with the contextual implementation of green and complete streets.

Strengths

Participants of the charrette identified the diversity of engaged participants, a progressive city planning department, and rich community historical focus as important community strengths. Other important strengths identified by workshop participants included the walkability of the community, existing grass space, and historic preservation.

- **Stakeholders:** Given a diverse and vested group of community participants and a forward-thinking city planning office, Huntington has several important and motivated partners to support green infrastructure planning and implementation.
- **Historical focus:** The city has a rich historical focus driving a sense of place with long-term community members that appreciate the value of the community.
- **Current conditions:** The project area has existing grass space, wide traffic lanes, and a regularly utilized sidewalk infrastructure that would benefit significantly by improving the walkability. These existing components provide ample space for green infrastructure.

These strengths can help build support and funding for green infrastructure and can provide a tool for the city's vision of community revitalization, connectivity, and reduction of local street flooding.

⁶ Sharrows are road markings indicating that a traffic lane is intended for use by both vehicles and bicyclists.

Challenges

The Stormwater Utility faces several challenges in implementing green infrastructure projects. Some of these challenges stem from a lack of local resources, while others can be traced to the need for stakeholder engagement and support.

- **Limited Funding for Construction and Maintenance:** The Stormwater Utility has limited budget for stormwater infrastructure, in general, and green infrastructure more specifically, including implementation and long-term maintenance. Approximately 80% of the Stormwater Utility's budget is used to operate and maintain the Floodwall along the Ohio River.
- **Limited Staff:** The Stormwater Utility administrative staff is a small team without a maintenance crew. It was specifically mentioned acquisition of maintenance personnel from city departments is limited since the Stormwater Utility is entirely separate from the city. This makes post-implementation maintenance a significant challenge and requires self-sustaining options.
- **Property Owners:** Existing property owners must support the green infrastructure projects and assist in maintaining those adjacent to their homes and businesses.
- **Lack of Technical Data:** The aging infrastructure is not well known and there is not comprehensive digital data. Contractors do not have access to important utility mapping, driving up the cost of projects.
- **Local Resistance:** There are conflicting priorities and approaches among stakeholders, property owners, volunteer groups, and city officials. This conflict can lead to a lack of progress.

The roots of many of these challenges are shared by many other similar communities striving to incorporate green infrastructure into their portfolio of stormwater management opportunities. The goal of this technical assistance is to help identify key opportunities for green infrastructure and fund a percentage of the initial concept design, which can be used to seek funding for implementation, and can help overcome some of these challenges.

Opportunities

Despite the challenges described above, workshop participants were optimistic about several opportunities to advance green infrastructure in Huntington. Many felt that key organizations and characteristics can be leveraged to overcome the challenges identified during the workshop.

- **Funding Sources:** Department of Transportation local funding assistance exists through KYOVA, the local Metropolitan Planning Organization. The National Endowment of the Arts is currently working with Unlimited Future, Inc. on signage design in other areas of Huntington and may be a beneficial partner for this project, EPA's Green Infrastructure Funding Sources are referenced in the Additional Resources section.
- **Socio-economic Leverage** The low cost of living and materials helps create an economically feasible project.
- **Available Public Space** The existing public rights-of-way are large. Some contain grass space currently. The large private parking areas at the 14th Street intersection are ideal given effective public-private partnerships.
- **Local Government Support:** The mayor is invested in Central City and West Huntington revitalization. Several representatives of the local planning departments and agencies

attended the workshop as stakeholders, increasing the likelihood of future collaboration. KYOVA representatives mentioned funding possibilities through their organization due to the existence of the bus stops in the corridor.

- **Entrepreneurial Spirit:** Since the days of the coal boom, the area has had a strong entrepreneurial spirit, drive, and willingness to reinvent the community in a more evolved way.

PRIORITIZATION AND CONCEPT DESIGNS

The charrette process identified three overarching green street concepts important to both teams and three more concepts identified by team White. By consensus, both teams advocate for permeable pavement parking on 14th Street West, adding a bus stop and vegetation with flooding mitigation next to the West Tenampa Restaurant, and installing a bike lane on the north side of Madison Avenue as opposed to the south side. Team White also encourages improving pedestrian scale lighting on Madison Avenue, creating gateway signage at 14th Street West and the interstate exit, and creating a gathering area with stormwater treatment in a section of the department store parking lot on the corner diagonal to the West Tenampa restaurant. The consultant developed advanced green street concept designs based on the input and guidance from the charrette attendees. The concept designs in plan view, section, and rendering format are provided in the appendix. The following advanced designs were created based on stakeholder input and site conditions.

NEXT STEPS

The technical assistance identified overarching goals important to the Huntington Stormwater Utility and encompassing all the strengths, challenges, and opportunities discussed at the workshop. It also provides 20% design based on stakeholder input. The 20% design documents, including model analysis using EPA's Stormwater Calculator will be provided as a standalone document. Next steps to ensure project implementation include:

- Prioritize the project areas in the event of partial or multi-year funding cycles.
- Engage with regulatory agencies, other stakeholders, and property owners to build partnerships and discuss each prioritized area to determine the feasibility of moving forward.
- Identify strategies and responsible parties or individuals for implementation of each green infrastructure project component.
- Identify and apply for funding for construction and maintenance.

ADDITIONAL RESOURCES

U.S. EPA Building Blocks for Sustainable Communities

<http://www.epa.gov/dced/buildingblocks.htm>

National Stormwater Calculator

<https://www.epa.gov/water-research/national-stormwater-calculator>

EPA's Green Infrastructure Website

<http://www.epa.gov/green-infrastructure>

National Association of City Transportation Officials (NACTO) Urban Street Stormwater Guide

<https://nacto.org/publication/urban-street-stormwater-guide/>

EPA's Green Infrastructure Funding Sources

<https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities>

EPA's Water Finance Clearinghouse

<https://ofmpub.epa.gov/apex/wfc/f?p=165:1:.....>

Implementing Stormwater Infiltration Practices at Vacant Parcels & Brownfields

<http://www.epa.state.il.us/water/watershed/publications/implementing-stormwater-infiltration-practices.pdf>

EPA Reference Documents on Incorporating Green Infrastructure into Brownfields Projects

https://www.epa.gov/sites/production/files/2015-07/documents/green_infrastructure-9-16-14.pdf

<http://www.epa.gov/green-infrastructure>

West Virginia Stormwater Management and Design Guidance Manual

<https://dep.wv.gov/WWE/Programs/stormwater/MS4/Pages/StormwaterManagementDesignandGuidanceManual.aspx>

APPENDIX A – CONCEPT DESIGN PLAN FOR 15TH ST. WEST THROUGH 13TH ST. WEST

MADISON AVENUE GREEN STREET CONCEPT: ADVANCED DESIGN

OPPORTUNITIES

- A** Combat flooding at the intersection of Madison Avenue and 14th Street W by repairing the cracked pavement and adding best management practices (BMPs) adjacent to the problem area.
- B** Provide a highly visible stamped intersection at Madison Avenue and 15th Street W to enhance the rails-with-trails experience for walkers, joggers, and cyclists.
- C** Reduce urban heat island effect by providing shade trees, native plantings, and pavement removal when possible.
- D** Improve pedestrian experience along Madison Avenue by incorporating entrance/gateway signage, improved crosswalks, and traffic-calming measures.
- E** Provide a designated bicycle lane where space is available.
- F** Add sharrow markings where space isn't available for a designated bicycle lane.
- G** Utilize permeable pavement in highly-visible sidewalks, parking spaces, and parking lots.

CHALLENGES

- A** There is a lack of capacity for routine maintenance, repair, and replacement of aging infrastructure.
- B** High amount of impervious surfaces create localized flooding issues.
- C** Truck traffic and industrial activities create high sediment accumulation on the streets.
- D** Fast vehicular speed and lack of crosswalks create an unsafe pedestrian experience.

GENERAL RECOMMENDATIONS

- 1 Retrofit existing planting strips (between the sidewalk and the roadway) into stormwater best management practices (BMPs).
- 2 Clean out, repair, and/or replace all aging infrastructure.
- 3 Repurpose existing vacant lots into community amenities.



INSPIRATION



REPURPOSED COMMERCIAL UNIT

FARMERS' MARKET IN PARKING LOT

BUS PASSENGER WAITING AREA

GATEWAY SIGNAGE

POCKET PARK

POCKET PARK EVENT SPACE

APPENDIX B – CONCEPT DESIGN PLAN FOR 17TH ST. WEST THROUGH 15TH ST. WEST

MADISON AVENUE GREEN STREET CONCEPT: ADVANCED DESIGN

OPPORTUNITIES

- A** Combat flooding by repairing the cracked pavement and adding best management practices (BMPs) adjacent to the problem area.
- B** Provide a highly visible stamped intersection at Madison Avenue and 15th Street W to enhance the rails-with-trails experience for walkers, joggers, and cyclists.
- C** Reduce urban heat island effect by providing shade trees, native plantings, and pavement removal when possible.
- D** Improve pedestrian experience along Madison Avenue by incorporating entrance/gateway signage, improved crosswalks, and traffic-calming measures.
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| KEY | |
|-----|---------------------------------|
| | EX. STREET TREE |
| | EX. OVERHEAD ELECTRIC LINE |
| | EX. LAMP POST |
| | EX. POWER POLE |
| | EX. STORM DRAIN INLET |
| | PERMEABLE PAVEMENT |
| | ENHANCED CROSSWALK |
| | ENHANCED SIGNAGE |
| | BIORETENTION AREA |
| | STREET TREE |
| | ADDITIONAL TREE CANOPY |
| | SHARROW |
| | BIKE LANE |
| | POTENTIAL REDEVELOPMENT AREA |
| | SHARED USE PEDESTRIAN-BIKE PATH |



INSPIRATION



APPENDIX C – CONCEPT DESIGN RENDERINGS



Gateway signage at 14th St. West, view to north from Madison Avenue.

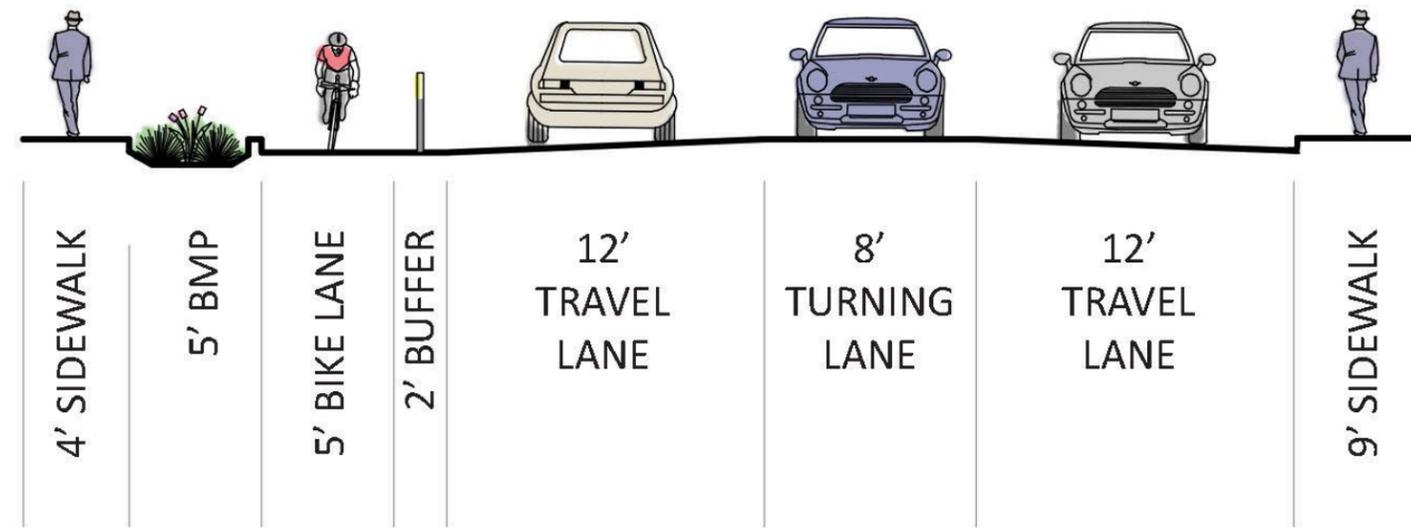


14th St. West intersection with Madison Avenue, area of frequent flooding, view to north.



Rails with Trails Intersection, view to northeast from rail tracks at Madison Avenue

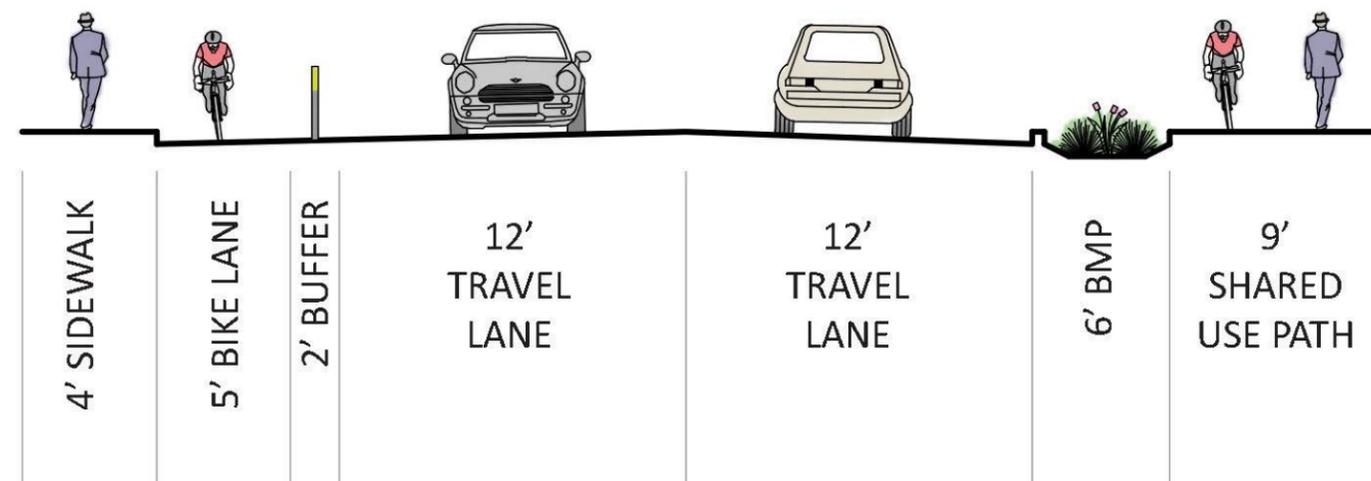
APPENDIX D – CONCEPT DESIGN SECTIONS



SECTION A-A'

NOT TO SCALE

Street Section applicable to mid-point of block between 15th St. West and 14th St. West



SECTION B-B'

NOT TO SCALE

Street Section applicable to mid-point of block between Route 52Hwy 52th and 15th St. West